Power market integration and challenges in Europe

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Agenda

What is Nord Pool?
What is Nord Pool’s legacy and market integration history?
What are the recent power market needs (challenges) in Europe?
What is Nord Pool?
What is Nord Pool’s legacy and market integration history?
Nord Pool’s business is now only power spot markets; we used to cover financial power markets, too.

**Financial market**
Hedging of sell/buy price in advance

**Day Ahead market**
Auction

**Intraday market**
Continuous trading (auction)

**Balancing markets**
For maintaining the power balance
How the auction works: the auction algorithm maximizes social welfare

Social welfare = consumer surplus + supplier surplus + congestion rent; while respecting all the given grid constraints

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<tr>
<th>Price [EUR/MWh]</th>
<th>Demand</th>
<th>Supply</th>
<th>Optimal price</th>
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Consumer surplus = difference between the demand offer price and market price

Producer surplus = difference between the supply offer price and market price

Optimal volume
EU: One common integrated European power market
Our strong legacy as the world’s first international power market

- 1991: Norwegian power market deregulated
- 1993: Nord Pool is established as the world’s first international power market
- 1996: Norway deregulates electricity
- 1999: Nordic market fully integrated
- 2000: Baltic Sea countries deregulate
- 2002: Latvija opened as a market
- 2008: Nord Pool Spot becomes the market for short-term electricity trading
- 2010: Nord Pool Spot becomes NEMO in 16 markets
- 2020: Nord Pool becomes a 100% power exchange

Through our dedication to innovation and collaboration, Nord Pool continues to shape the future of energy markets.
Main steps towards an integrated European power market: MRC and XBID

- **1996**: Nord Pool: world's first international power market with common Nordic system price
- **2006**: Day-ahead market coupling of France, Belgium and the Netherlands
- **2007**: MIBEL couples Spain and Portugal
- **2010**: Coupling of Central Western Europe (CWE), incl. coupling with the Nordics, Poland and the Baltics
- **2014**: Coupling of CWE, GB, the Nordics and Baltics and MIBEL. 4M market coupling integrates CEE from Hungary to Romania
- **2015**: Italian Borders Market Coupling launched, multi-regional coupling covering 19 countries
- **2017 (est.)**: XBID project: integration of continuous IDM

Source: Europex Market Vision Project
Where?
Nominated Electricity Market Operator (NEMO) in 15 European countries.

We are rapidly expanding to 7 markets in Central Europe (CE): Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Poland

What?

When?
From our side we are going to be ready in Q4 2017
Thanks to our legacy we consult worldwide
What are the recent power market needs in Europe?
RES (especially iRES) have been increasing their share across Europe (EU-28)...

Source: Eurostat (online data codes: nrq_105a and tsdqc336)
...and will in the next years

50% (~30% of wind and PV) in 2030 (EU targets)
A similar pattern applies to Germany—one main driver

**Agora Energiewende (2016)**

- 40-45% in 2025
- 55-60% in 2035
- 80% in 2050
1: Trading closer to delivery...
... and API trading
The merit order concept for the auction: what counts in determining the clearing price is the marginal cost of the last plant used. RESs have the lowest marginal cost -> the more RES, the lower prices.
The introduction of RES in the European markets drove down wholesale power prices in the DA auction.

In the continuous markets we have the same trend.
2: Cost cutting
The next generation trading in Europe: How can power traders combine the two needs?

1. algorithmic trading?
2. comparative advantage?
3. with cost-cutting?
These two further needs are key to enable an integrated and competitive market in Europe

3. Shared order books and liquidity across all markets

4. Market design that foresees equal playing field, everywhere, including CE
We have an office in Berlin: come and talk to us any time!
DANKE!

Dziękuję!
THANK YOU!
TAKK!
MERCI!
GRAZIE!
DANK JE!

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Questions?
Pietro is Director for Central European Markets and responsible for expanding Nord Pool’s business across Europe and creating greater value for its customers.

He has a professional background in international business, and the public and academic sectors, particularly relevant to the energy and power trading environment and to his role at Nord Pool.

Pietro has studied engineering at Politecnico di Milano in Italy and at Ecole Polytechnique in France and pursued postgraduate business and government studies at Harvard University in the US.

He has lived in 7 countries so far. You may address him in Norwegian in the longer run, but for now it is easier to choose among English, German, French, Italian or Greek (you can try some Spanish and Russian, too).